

## REMARKS

### **I. Introduction**

Claims 1 to 16 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

### **II. Rejection of Claims 1 to 5, 7 to 13, 15 and 16 Under 35 U.S.C. § 103(a)**

Claims 1 to 5, 7 to 13, 15 and 16 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of PCT International Published Patent Application No. WO 98/53229 ("Werner et al.") and U.S. Patent No. 5,474,305 ("Flower"). Applicants respectfully submit that the combination of Werner et al. and Flower does not render obvious the present claims for the following reasons.

Claims 1 and 9 relate to a brush seal and recite that the brush seal includes a bristle housing. Claims 1 and 9 have been amended herein without prejudice to recite that the bristle housing is press-fit in an axial space between a fastening element and a first one of the rotor and the stator. Support for this amendment may be found, for example, at page 8, lines 18 to 24 of the Specification, which states that "[s]ince the axial length of the construction space for the brush seal 1 is predetermined by the distance between the fastening element 24 and the housing shoulder 25, assembly of the brush seal 1, which involves the final insertion of the annular fastening element 24 into a housing recess, is not possible if the prominence 15 does not engage in the recess 16." Claims 1 and 9 recite that the bristle housing is press-fit on the first one of a rotor and a stator against movement in a radial direction relative to the first one of the rotor and the stator. Claims 1 and 9 also recite that first and second positioning arrangements are configured to interact with each other in a positive-locking manner to maintain the press-fit against movement in a radial direction.

Applicants respectfully submit that the combination of Werner et al. and Flower does not render obvious claims 1 and 9 for at least the reason that the combination of Werner et al. and Flower does not disclose or suggest all of the features of claims 1 and 9. For example, the combination of Werner et al. and Flower does not disclose or suggest a bristle housing that is **press-fit in an axial space between a fastening element and a first one of the rotor and the stator**,

and first and second positioning arrangements that are configured to interact with each other in a positive-locking manner to maintain the press-fit of the bristle housing against movement in a radial direction. As set forth above, the Specification states at page 9, lines 8 to 9 that “[f]or the assembly, the brush seal 1 . . . is pushed into a seat on a stator 9” and that only when “the brush seal 1 [is] dismantled for maintenance or repair” is “the brush seal 1 . . . removed from its seat in a stator 9.” Specification at page 9, lines 27 to 30. The Specification states at page 8, lines 18 to 24 that “[s]ince the axial length of the construction space for the brush seal 1 is predetermined by the distance between the fastening element 24 and the housing shoulder 25, assembly of the brush seal 1, which involves the final insertion of the annular fastening element 24 into a housing recess, is not possible if the prominence 15 does not engage in the recess 16.” The Specification states at page 7, lines 15 to 18, that “[a]s a result [of the first and second positioning arrangements], a lighter-duty press fit at the circumferential surface 5 of the bristle housing 2 with load relief of the components may be used.”

As an initial matter, the Office Action admits at page 2 that “Werner [et al.] fails [to disclose] the first and second positioning arrangements to be configured to interact with each other in a positive locking manner providing definite positioning of the bristle housing.” The Office Action maintains in paragraph 2 that “Werner discloses a . . . bristle housing (2) press-fit on the stator [and that] the bristle housing is secured against movement in a radial direction.” Applicant respectfully disagrees. Referring to the English-language translation of Werner et al. submitted herewith, it is stated at page 5 that “[c]rimping lip 7 does not completely embrace outer edge 8 of support plate 4.” As illustrated in Figure 1, this deformation of the beaded lip 7 provides that the outermost edge of beaded lip 7 is spaced apart from a corresponding internal shoulder of the housing 2, thereby enabling the brush seal 1 to move in a radial direction relative to the housing 2. Thus, Werner et al. fail to disclose or suggest a press-fit against movement in a radial direction of a bristle housing, e.g., brush seal 1, press-fit on a rotor or stator, e.g., housing 2.

Flower purport to relate to a brush seal assembly that, in the arrangement of Figures 8 and 9 having a circular shaft (which were referred to and relied on in the Office Action), employs a wave seal arrangement to maintain contact with a shaft to be sealed. Specifically, Flower describes an arrangement for permitting the brush seal to maintain contact with a shaft to be sealed which

accommodates radial excursions of the shaft and which accommodates any non-circularity or other variations of the shaft. According to Flower, radial constraints on the brush seal are removed so that the seal is permitted to “float” in a radial direction and follow radial excursions of a rotating shaft. See, e.g., col. 6, lines 38 to 44. For example, Flower states that “[t]he whole of the seal member together with the ring 60 and spring 61 may float in the housing, for example to accommodate excursions of the shaft 50 with respect to the housing, whilst the multi-element seal member urged by spring 61 may accommodate any non-circularity or other variations in the shaft.” Thus, the wave seal arrangement in Figures 8 and 9 of Flower operates to permit the brush seal to move radially relative to the housing so as to follow radial excursions of the rotating shaft and any non-circularity or other variations of the shaft. Thus, irrespective of whether the bristle housing of Werner et al. is press-fit, the wave seal arrangement of Flower, which provides for a radially floating brush seal, is not intended for, nor even capable of, maintaining a press-fit against movement in a radial direction.

Furthermore, to the extent that any component of Flower could be considered a “fastening element” -- which Applicants maintain they should not be -- the brush seal assembly of Flower is not press-fit into an axial space between such a component and a rotor or stator. For example, to the extent that the housing 51 could be considered a “fastening element” -- which Applicants maintain it should not be -- the brush seal assembly of Flower is not press-fit into an axial space between the housing 51 and a rotor or stator, but rather is bolted between the housing 51 and a separate housing part 52 which is neither a rotor or a stator.

The Office Action maintains in paragraph 18 that “Applicant’s arguments center around the limitation that first and second positioning arrangements hold ‘against movement in a radial direction’ [and] newly cited reference to Flower has been incorporated to show this.” Since, as set forth above, Werner et al. fails to disclose or suggest a bristle housing that is press-fit in an axial space between a fastening element and a first one of the rotor and the stator, and a press-fit against movement in a radial direction of a bristle housing on a rotor or stator, and since the Office Action *admits* that Flower are not relied on to disclose or suggest, and indeed do not disclose or suggest, this feature, Applicant respectfully maintain that the combination of Werner et al. and Flower does not disclose or suggest all of the features of claims 1 and 9.

To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Since the combination of Werner et al. and Flower does not disclose or suggest all of the features of claims 1 and 9, it is respectfully submitted that the combination of Werner et al. and Flower does not render unpatentable claims 1 and 9.

Furthermore, any proposed modification of such a floating radial seal to be press-fit against movement in a radial direction, or to maintain a press-fit against movement in a radial direction, would render the floating brush seal described by Flower unsatisfactory for its intended purpose and/or change the principle of operation of the floating brush seal described by Flower. Accordingly, it is respectfully submitted that there is no suggestion or motivation to make the proposed combination, and, consequently, it is respectfully submitted that the combination of Werner et al. and Flower does not render unpatentable claims 1 and 9 for this additional reason.

In addition, Applicants respectfully submit that claims 2 to 5, 7, 8, 10 to 13, 15 and 16, which ultimately depend from claim 1, and therefore include all of the features of claim 1, are also not rendered unpatentable by the combination of Werner et al. and Flower for at least the same reasons given above in support of the patentability of claim 1. In re Fine, supra (any dependent claim depending from a non-obvious independent claim is non-obvious).

### **III. Rejection of Claims 6, 8 and 9 Under 35 U.S.C. § 103(a)**

Claims 6, 8 and 9 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Werner et al., Flower and U.S. Patent No. 6,106,190 ("Nakamura et al."). It is respectfully submitted that the combination of Werner et al., Flower and Nakamura et al. does not render unpatentable claim 6, 8 and 9 for at least the following reasons.

Claim 6 relates to a brush seal and recites that the brush seal includes a bristle housing. Claim 6 has been amended herein without prejudice to recite that the bristle housing is press-fit in an axial space between a fastening element and a first one of the rotor and the stator. Support for this amendment may be found, for example, at page 8, lines 18 to 24 of the Specification, which states that “[s]ince the axial length of the construction space for the brush seal 1 is predetermined by the distance between the fastening element 24 and the housing shoulder 25, assembly of the brush seal 1, which involves the final insertion of the annular fastening element 24 into a housing recess, is not possible if the prominence 15 does not engage in the recess 16.” Claim 6 also recites that the first positioning arrangement and the second positioning arrangement are configured to interact with each other in a positive-locking manner to maintain the press-fit against movement in a radial direction.

As set forth above in connection with claims 1 and 9, the combination of Werner et al. and Flower does not disclose or suggest a bristle housing that is **press-fit in an axial space between a fastening element and a first one of the rotor and the stator**, and first and second positioning arrangements that are configured to interact with each other in a positive-locking manner to **maintain the press-fit** of the bristle housing **against movement in a radial direction**. Claim 8 ultimately depends from -- and thus includes all of the features of -- claim 1, and therefore the combination of Werner et al. and Flower does not disclose or suggest this same feature of claim 8. Still further, the combination of Werner et al. and Flower also does not disclose or suggest this same feature of claim 6. Applicants respectfully submit that the combination of Werner et al., Flower and Nakamura et al. does not render unpatentable claims 6, 8 and 9 because Nakamura et al. are not relied on to disclose or suggest, and do not disclose or suggest, those features of claims 6, 8 and 9 not disclosed or suggested by the combination of Werner et al. and Flower. For instance, Nakamura et al. are not relied on to disclose or suggest, and do not disclose or suggest, a bristle housing that is **press-fit in an axial space between a fastening element and a first one of the rotor and the stator**, and first and second positioning arrangements that are configured to interact with each other in a positive-locking manner to **maintain the press-fit** of the bristle housing **against movement in a radial direction**. Rather, Nakamura et al. purport to relate to a marine fender with a structure for fixing a pad to a fender frame, and do not in any

manner disclose, or even suggest, a bristle housing that is press-fit in an axial space between a fastening element and a first one of the rotor and the stator, the press-fit being on a first one of a rotor and a stator against movement in a radial direction relative to the first one of the rotor and the stator, and furthermore do not disclose or even suggest a first positioning arrangement and a second positioning arrangement that are configured to interact with each other in a positive-locking manner to maintain a press-fit against movement in a radial direction of a bristle housing that is press-fit on a rotor or a stator.

In view of all of the foregoing, it is respectfully submitted that the combination of Werner et al., Flower and Nakamura et al. does not render unpatentable claims 6, 8 and 9. Withdrawal of this rejection is therefore respectfully requested.

#### **IV. Rejection of Claim 14 Under 35 U.S.C. § 103(a)**

Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Werner et al., Flower and U.S. Patent No. 5,066,025 ("Hanrahan"). It is respectfully submitted that the combination of Werner et al., Flower and Hanrahan does not render unpatentable claim 14 for at least the following reasons.

Claim 14 depends from claim 1 and therefore includes all of the features recited in claim 1. As more fully set forth above, the combination of Werner et al. and Flower do not disclose, or even suggest, all of the features recited in claim 1, from which claim 14 depends. Hanrahan does not disclose or suggest the features recited in claim 1 not disclosed or suggested by the combination of Werner et al. and Flower. Accordingly, it is respectfully submitted that the combination of Werner et al., Flower and Hanrahan does not render unpatentable claim 14, which depends from claim 1.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

V. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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By: Cliff A. Ulrich

Clifford A. Ulrich  
Reg. No. 42,194

KENYON & KENYON LLP  
One Broadway  
New York, New York 10004  
(212) 425-7200  
**CUSTOMER NO. 26646**